

SEQUENTIAL GAS FLOW OXIDE DEPOSITION TECHNIQUE

ABSTRACT OF THE DISCLOSURE

A method of depositing a silica glass insulating film over a substrate. In one embodiment the method comprises exposing the substrate to a silicon-containing
5 reactant introduced into a chamber in which the substrate is disposed such that one or more layers of the silicon-containing reactant are adsorbed onto the substrate; purging or evacuating the chamber of the silicon-containing reactant; converting the silicon-containing reactant into a silica glass insulating compound by exposing the
10 substrate to oxygen radicals formed from a second reactant while biasing the substrate to promote a sputtering effect, wherein an average atomic mass of all atomic constituents in the second reactant is less than or equal to an average atomic mass of oxygen; and repeating the exposing, purging/evacuating and exposing sequence a plurality of times until a desired film thickness is reached.

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